



### **Glide sport article, especially ice skate**

The invention pertains to a glide sport article, especially ice skate and thereby in particular to a hockey skate according to the preamble of claim 1.

The object of the invention is to present a glide sport article that is especially suited for children and that enables adjustment and adaptation of the length of the shoe or shoe element to different foot sizes over a relatively large range, however while still fulfilling the requirements exhibited especially by hockey skates, above all with respect to an optimum fit on the foot of the wearer and also optimum protection and sufficient stability.

To achieve this object, a glide sport article, especially ice skate, according to claim 1 is embodied.

A special feature of the invention is, for example, that the shoe body section that is permanently fastened to the chassis extends over the greater length of the shoe body or shoe and forms its sides, the heel area and the support there for the leg area above the ankle and also contains the lacing, while the shoe tip, which is adjustable in the longitudinal direction of the shoe body or in the longitudinal direction of the chassis protrudes from the shoe body section only with a much smaller length.

A further special feature is that the tongue located beneath the lacing of the shoe is connected with the shoe tip and is adjusted with the latter and that the shoe body section that is permanently connected with the chassis overlaps the cap-like shoe tip on its outer surface, namely over an area that is greater than the maximum adjusting area of the shoe tip.

Further embodiments of the invention are described in the dependent claims. The invention is described in more detail below based on the drawings and a sample embodiment:

Fig. 1 - a simplified depiction in side view of a hockey skate with a shoe body of adjustable length;

Fig. 2 - an enlarged individual depiction in cross section of the front, adjustable cap of the shoe element, together with the chassis or frame of the ice skate;

Fig. 3 – 4 - partial views of the front, adjustable cap;

Fig. 5 - a schematic depiction in front view of the sole.

In the drawing, 1 generally designates a hockey skate consisting of an upper shoe or shoe body 2, of a chassis 3 connected with the sole 4 of the shoe body 2 and supporting the latter, and of a runner 5 located on the bottom of the chassis 3. In the depicted embodiment, the chassis 3 is essentially manufactured from plastic as a molded part. The runner 5 is made of steel.

The shoe body 2 comprises a shoe tip 2.1 and a shoe body section 2.2, as is known in the art. The latter contains the usual lacing 6 on the front of the shoe body 2, located at the top front of the shoe body section 2.2 and with which the shoe can be tied to the foot of the user. In the depicted embodiment, the lacing 6 reaches to the cap-like shoe tip 2.1. Furthermore, the shoe body section 2.2 forms the heel area of the shoe 2 with an ankle support.

The shoe body section 2.2 reaches from the rear or the heel area of the shoe body to the shoe tip 2.1, such that the latter protrudes forward from the shoe body section 2.1 with only a very small length in comparison with the overall length of the shoe body 2. In the depicted embodiment, the length of the shoe body section 2.2 is at least 70% of the maximum total length of the shoe body 2. The cap-like shoe tip 2.1 and the shoe body section 2.2 are manufactured of materials suitable for shoes for hockey skates. Furthermore, the shoe body section 2.2 is provided with a reinforcement on the side, i.e. with an impact guard 7, which extends above the sole

4 and beneath the lacing 6 from the heel area of the shoe body 2 to the vicinity of the shoe tip 2.1. Beneath the lacing 6 is likewise the usual tongue 8, which is permanently connected with the cap-like shoe tip 2.1. The latter is overlapped on the outside by the shoe body section 2.1 and can be adjusted in stages relative to the shoe body section 2.2 on the chassis 3 corresponding to the double arrow A in Figure 1, namely by a pre-defined, maximum adjustment distance for adapting the shoe to different foot sizes.

For this purpose, the shoe tip 2.1 can move in a guide with part of the sole 4 or with the sole element 4.1 on the chassis 3. The chassis 3 comprises two rail-like ridges or guides 10, each of which protrudes over one longitudinal side of the chassis and each of which engages in a longitudinal groove 11 on the bottom of the sole element 4.1. For the formation of the grooves 11 the sole element 4.1 is provided with a T-shaped grooved recess 12, which forms the guide grooves 1 with its lateral extensions.

On the sole element 4.1 there is furthermore a toothed strip 13 protruding over the bottom of the sole element and extending in longitudinal direction and therefore in the adjustment direction of the shoe tip 2.1 and which has a plurality of teeth 14 on its bottom side. The toothed strip 13 or its teeth 14 act in combination with gear teeth 15 located on a locking element 16. The latter can move on bearings (double arrow B) in the chassis 3 in an axis that is perpendicular to a plane E, which encloses the longitudinal axis of the skate and is also the middle axis of the chassis 3, namely against the effect of a pull-back spring 17 from a position (Figure 3) locking the toothed strip 13 and therefore the shoe tip 2.1 into a position (Figure 4) releasing the toothed strip 13 and therefore the shoe tip 2.1.

The locking element 16 in the depicted embodiment and the toothed strip 13 are molded parts made of plastic. For guiding the locking element 16, openings are provided for the locking element 16 in the walls 3.1 and 3.2 of the chassis 3, which is designed as a hollow body, namely one opening in the wall 3.1 for a peg-like section

16.1 of the locking element on which (element) the spring 17 for this section is also located, and one opening 19 for the section 16.2 of the locking element. The teeth 15 are also located on the section 16.2. The section 16.2 has a non-circular cross section, i.e. in the depicted embodiment an oval cross section, to which the opening 19 is adapted, so that the locking element 16 is held in the chassis 3 so that it is axially movable but unable to twist. On the end that is distant from the section 16.1, the section 16.2 forms an actuating or pressure surface 16.3, which protrudes beyond the outer surface of the wall 3.2 of the chassis 3 when the spring 17 is released, i.e. when the toothed strip is locked (Figure 3). In this state, the teeth 15 engage in the toothed strip 13. Pressing the actuating or pressure surface 16.3 causes the locking element 16 to move against the effect of the spring 17 far enough that the teeth 15 disengage from the toothed strip 13. The opening 18 is closed by a cover 18.1.

Figure 5 again shows, in a simplified schematic depiction, the sole element 4.1 in bottom view, together with the sole section or element 4.2 that is permanently connected with the shoe body section 2.2, by means of which (sole element) the shoe body 2 or the shoe body section 2.2 is permanently connected with the chassis 3, e.g. by means of rivets or other suitable fastening means.

In order to seal the shoe body 2 in the area of the sole 4, especially against penetration by water, the two sole elements 4.1 and 4.2 are designed so that these two sole elements overlap at least partially in any adjustment position of the shoe tip 2.1. In the depicted embodiment the overlapping is achieved by the fact that the sole element 4.2 comprises a tongue 20, which engages in a recess 21 of the sole element 4.1, as depicted in Figure 5.

The invention was described above based on a sample embodiment. It goes without saying that numerous modifications and variations are possible without abandoning the inventive idea upon which the invention is based.

### Reference marks

1	ice skate, especially ice hockey skate
2	body of shoe
2.1	tip of shoe
2.2	section of shoe body
3	chassis
3.1, 3.2	side wall of chassis
4	sole
4.1, 4.2	sole element
5	runner
6	lacing
7	reinforcement
8	tongue
9	top side
10	guide
11	guide groove
12	recess
13	toothed strip
14	tooth
15	gear teeth
16	locking element
16.1, 16.2	section
16.3	actuating surface
17	pull-back spring
18, 19	opening
18.1	cover
20	tongue
21	recess
A	adjustment of shoe tip 2.1
B	movement of the locking element 16

E middle plane of the ice skate or of the chassis 3